

**Kansas Department of Health and Environment  
Division of Environment  
Bureau of Water**

**REGULATORY IMPACT STATEMENT CONSISTING OF:**

**ENVIRONMENTAL BENEFIT STATEMENT AND**

**ECONOMIC IMPACT STATEMENT**

Pursuant to K.S.A. 2016 Supp. 77-416

**PROPOSED NEW REGULATIONS**

K.A.R. 28-15a-32  
K.A.R. 28-15a-400  
K.A.R. 28-15a-600  
K.A.R. 28-15a-620  
K.A.R. 28-15a-700  
K.A.R. 28-15a-851

**PROPOSED AMENDED REGULATIONS**

K.A.R. 28-15-18, K.A.R. 28-15-19, K.A.R. 28-15a-2, K.A.R. 28-15a-3,  
K.A.R. 28-15a-6, K.A.R. 28-15a-11, K.A.R. 28-15a-21, K.A.R. 28-15a-23, K.A.R. 28-15a-24,  
K.A.R. 28-15a-25, K.A.R. 28-15a-26, K.A.R. 28-15a-27, K.A.R. 28-15a-28, K.A.R. 28-15a-29,  
K.A.R. 28-15a-31, K.A.R. 28-15a-33, K.A.R. 28-15a-41, K.A.R. 28-15a-42, K.A.R. 28-15a-43,  
K.A.R. 28-15a-60, K.A.R. 28-15a-61, K.A.R. 28-15a-62, K.A.R. 28-15a-63, K.A.R. 28-15a-64,  
K.A.R. 28-15a-65, K.A.R. 28-15a-66, K.A.R. 28-15a-70, K.A.R. 28-15a-80, K.A.R. 28-15a-100,  
K.A.R. 28-15a-101, K.A.R. 28-15a-110, K.A.R. 28-15a-111, K.A.R. 28-15a-130, K.A.R. 28-15a-151,  
K.A.R. 28-15a-170, K.A.R. 28-15a-201, K.A.R. 28-15a-500

**PROPOSED REVOKED REGULATIONS**

K.A.R. 28-15a-4  
K.A.R. 28-15a-72 through K.A.R. 28-15a-76  
K.A.R. 28-15a-81 through K.A.R. 28-15a-91  
K.A.R. 28-15a-131 through K.A.R. 28-15a-135  
K.A.R. 28-15a-152 through K.A.R. 28-15a-155  
K.A.R. 28-15a-172 through K.A.R. 28-15a-175  
K.A.R. 28-15a-202 through K.A.R. 28-15a-210  
K.A.R. 28-15a-501 through K.A.R. 28-15a-503  
K.A.R. 28-15a-530 through K.A.R. 28-15a-536  
K.A.R. 28-15a-540 through K.A.R. 28-15a-544  
K.A.R. 28-15a-550 through K.A.R. 28-15a-553  
K.A.R. 28-15a-560 through K.A.R. 28-15a-564  
K.A.R. 28-15a-570 through K.A.R. 28-15a-571

## **Executive Summary of Proposed New Regulations, Proposed Amended Regulations, and Proposed Revocations Necessary to Implement the Safe Drinking Water Act**

### **Legal Authority**

The Safe Drinking Water Act (SDWA - P.L. 104-182), title XIV of the Public Health Service Act (P.L. 93-523), is the key federal law for protecting public water system customers from harmful contaminants. First enacted in 1974 and substantively amended in 1986 and 1996, the SDWA is administered through regulatory programs that establish standards and treatment requirements for drinking water, control underground injection of wastes that might contaminate water supplies, and protect groundwater. The United States Environmental Protection Agency (EPA) is the federal agency responsible for administering the provisions of the SDWA.

The 1974 law established the current federal-state arrangement in which states may be delegated primary implementation and enforcement authority for the drinking water program. The Public Water Supply Supervision (PWSS) program and the Drinking Water State Revolving Fund (DWSRF) loan program are the basic federal programs for regulating and financing SDWA requirements to the nation's public water systems through state, tribal, and territorial governments. K.S.A. 65-171m states in part: "The secretary of health and environment shall adopt rules and regulations for the implementation of this act. . . . The standards established under this section shall be at least as stringent as the national primary drinking water regulations adopted under public law. . . ."

### **Background**

In response to national concerns about the safety of our drinking water and its impact on public health, Congress first adopted the SDWA in 1974. Twelve years later, disease-causing microbial contamination had still not been sufficiently controlled and Congress significantly amended the act when it was re-authorized in 1986. Although the SDWA had been slightly amended on three previous occasions, the 1986 amendments were more comprehensive and required the EPA to establish regulations within certain time-frames, to require disinfection of nearly all public water supplies, to specify filtration requirements for nearly all water systems that draw their water from surface sources or groundwater under the direct influence of surface water (GWUDI), and to develop additional programs to protect groundwater supplies.

Accordingly, more than 240 million people in the United States now consume water that has been disinfected including over 2 million Kansas residents supplied drinking water from a public water supply system. Over the last 20 years, however, it has been determined that some microbial pathogens such as *Cryptosporidium* are highly resistant to traditional disinfection practices. Further, it has also since become known that drinking water disinfectants themselves can react with naturally occurring substances in source water and distribution systems to form unintended organic and inorganic byproducts which may pose health risks.

In 1996, Congress amended the SDWA again by requiring EPA to develop rules which balance the

risks between microbial pathogens and disinfection by-products in drinking water. EPA responded to this directive in 1998 by promulgating two companion rules, the Interim Enhanced Surface Water Treatment Rule (IESWTR - regulates microbial contaminants) and the Stage 1 Disinfection and Disinfection Byproducts Rule (Stage 1 DBPR - regulates disinfectants). Both of these rules build on the existing foundations in the SDWA and the previous rules on disinfectants and microbial treatment. They are intended by EPA to form a parallel foundation for implementing sets of progressively more protective regulations in the future. The Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) is specifically intended to prevent significant increases in microbial risk that might otherwise occur when systems implement the Stage 2 DBPR and begin reducing the level of disinfectants in their treatment programs. It is also designed to concurrently optimize treatment reliability and to enhance physical removal efficiencies in order to minimize the *Cryptosporidium* levels in finished water.

Federal law now requires that applicable PWSs comply with these drinking water standards regardless of state or tribal law. Concurrent amendments to Kansas Administrative Regulations, however, are necessary to maintain compliance with the provisions of the SDWA regarding state primacy for administrative and enforcement authority and related state eligibility for federal PWSS program grants and DWSRF program loan capitalization grants.

### **Proposed New Regulations**

KDHE is proposing to adopt the most recent series of microbial and disinfection by-product rules promulgated by the EPA. These newest sets of rules are comprised of the Ground Water Rule (GWR), Stage 2 Disinfection Byproducts Rule (Stage 2 DBPR), Long Term 2 Enhanced Surface Water Treatment Rule (LT2) and Revised Total Coliform Rule (RTCR). These newest rules build upon the previous set of microbial and disinfection by-product regulations adopted by KDHE on October 1, 2004. The new proposed regulations recommended as K.A.R. 28-15a-400, K.A.R. 28-15a-600, 28-15a-620, K.A.R. 28-15a-700 and K.A.R. 28-15a-851 are no more stringent than existing state law or federal law requires for these purposes.

In addition to the above series of microbial and disinfection byproduct rules, the EPA has promulgated revisions to the existing Lead and Copper Rule (LCR) known respectively as the Short Term Revisions to the Lead and Copper Rule (STRLCR). The revisions are proposed to be adopted by amending K.A.R. 28-15a-80.

Lastly, KDHE is proposing an electronic reporting requirement for all public water supply systems. This proposal will require electronic submission of all public water supply system related materials, including but not limited to surveys, assessments, reports, and monitoring and compliance data. The new proposed regulation is recommended as K.A.R. 28-15a-32.

As codified under 40 C.F.R. 141, recent federal revisions to the National Primary Drinking Water Regulations summarized as the Ground Water Rule (GWR), Stage 2 Disinfection Byproducts Rule (Stage 2 DBPR), Long Term 2 Enhanced Surface Water Treatment Rule (LT2), Revised Total Coliform Rule (RTCR) and the Short Term Revisions to the Lead and Copper Rule (STRLCR), now require concurrent amendments to Kansas Administrative Regulations summarized as follows:

## Ground Water Rule

EPA issued the Ground Water Rule (GWR) to improve drinking water quality and provide additional protection from disease-causing microorganisms. Water systems that have groundwater sources may be susceptible to fecal contamination. In many cases, fecal contamination can contain disease-causing pathogens. The GWR will provide increased protection against microbial pathogens.

The GWR became effective on December 1, 2009 and applies to public water systems that serve groundwater. The rule also applies to any system that mixes surface and groundwater if the groundwater is added directly to the distribution system and provided to consumers without treatment. The targeted, risk-based strategy addresses risks through an approach that relies on four major components:

- Periodic sanitary surveys of systems that require the evaluation of eight critical elements of a public water system and the identification of significant deficiencies (e.g., a well located near a leaking septic system);
- Triggered source water monitoring when a system that does not already treat drinking water to remove 99.99 percent (4-log) of viruses identifies a positive sample during its microbial monitoring and assessment monitoring (at the option of the state) targeted at high-risk systems;
- Corrective action is required for any system with a significant deficiency or source water fecal contamination; and
- Compliance monitoring to ensure that treatment technology installed to treat drinking water reliably achieves 99.99 percent (4-log) inactivation or removal of viruses.

## Stage 2 Disinfection Byproducts Rule

The Stage 2 DBP rule is intended to reduce potential cancer, reproductive and developmental health risks from disinfection byproducts (DBPs) in drinking water which form when disinfectants are used to control microbial pathogens. This rule strengthens public health protection for customers of systems that deliver disinfected water by requiring such systems to meet maximum contaminant levels as an average at each compliance monitoring location (instead of as a system-wide average as in previous rules) for two groups of DBPs, trihalomethanes (TTHMs) and five haloacetic acids (HAA5s). The rule targets systems with the greatest risk and builds incrementally on existing rules. This regulation will reduce DBP exposure and related potential health risks and provides more equitable public health protection. The Stage 2 DBPR is being released simultaneously with the Long Term 2 Enhanced Surface Water Treatment Rule to address concerns about risk tradeoffs between pathogens and DBPs.

Under the Stage 2 DBP rule, systems conducted an evaluation of their distribution systems, known as an Initial Distribution System Evaluation (IDSE), to identify the locations with high disinfection by-product concentrations. These locations were used by the systems as the sampling sites for Stage 2 DBP rule compliance monitoring.

Compliance with the maximum contaminant levels for two groups of disinfection by-products (TTHMs and HAA5s) will be calculated for each monitoring location in the distribution system. This approach, referred to as the locational running annual average (LRAA), differs from Stage 1 DBP rule

requirements, which determine compliance by calculating the running annual average of samples from all monitoring locations across the system.

The Stage 2 DBP rule builds incrementally on existing DBP rules. Many systems have already made significant progress in lowering their DBP levels. The Stage 2 DBP rule takes a risk-based targeted approach to require treatment changes by only those public water systems that are identified as having the greatest remaining risk. The first step was a multi-year process for systems to determine where higher levels of DBPs are likely to occur in their distribution system. These locations became the system's new DBP monitoring sites.

If the DBP levels at these locations are too high (i.e. above the MCL), the system will start to take corrective actions. These actions could range from simple, quickly implemented management or operational changes to major construction. Any changes made by systems must be well-studied and planned before execution. This planning, designing, obtaining funding, permitting, and finally, constructing new facilities take time. The time to completion will vary depending on what the system needs to do to achieve compliance. Depending on system size and the extent of needed construction, systems began the first year of compliance monitoring between 2012 and 2014 and were required to be in compliance with the Stage 2 DBP rule MCLs at the end of a full year of monitoring or face potential formal enforcement action.

### **Long Term 2 Enhanced Surface Water Treatment Rule**

Pathogens, such as *Giardia* and *Cryptosporidium*, are often found in water and can cause gastrointestinal illness (e.g. diarrhea, vomiting, cramps) and other health risks. *Cryptosporidium* is a significant concern in drinking water because it contaminates surface waters used as drinking water sources, it is resistant to chlorine and other disinfectants, and it has caused waterborne disease outbreaks. Individuals with weakened immune systems (e.g., infants and the elderly) may experience severe health effects and exposure to individuals with severely compromised immune systems (e.g., cancer and AIDS patients) may result in death.

The purpose of the LT2 rule is to reduce disease incidence associated with *Cryptosporidium* and other pathogenic microorganisms in the drinking water. The rule applies to all public water supply systems that use surface water or groundwater that is under the direct influence of surface water. The rule will bolster existing regulations and provide a higher level of protection of drinking water supplies by:

- Targeting additional *Cryptosporidium* treatment requirements to higher risk systems
- Requiring provisions to reduce risks from uncovered finished water storage facilities
- Providing provisions to ensure that systems maintain microbial protection as they take steps to reduce the formation of disinfection by-products

This combination of steps, combined with the existing regulations, is designed to provide protection from microbial pathogens while simultaneously minimizing health risks to the population from disinfection by-products.

Current regulations require filtered water systems to reduce source water *Cryptosporidium* levels by 99 percent (2-log). Recent data on *Cryptosporidium* indicate that this treatment is sufficient for most systems but additional treatment is necessary for certain higher risk systems. These higher risk systems

include filtered water systems with high levels of *Cryptosporidium* in their water sources and all unfiltered water systems, which do not treat for *Cryptosporidium*.

Systems initially monitor their water sources to determine treatment requirements. This monitoring involves two years of monthly sampling or one year of biweekly (once every two weeks) sampling for *Cryptosporidium*. To reduce monitoring costs, small filtered water systems (those serving less than 10,000 persons) will first monitor for *E. coli*, a bacterium that is less expensive to analyze than *Cryptosporidium*, and will be monitored for *Cryptosporidium* only if their *E. coli* results exceed specified concentration levels.

Water systems will be classified in one of four treatment categories (bins) based on their monitoring results. Most systems have been determined to be classified in the lowest bin and will face no additional requirements. Systems classified in higher bins must provide additional water treatment to further reduce *Cryptosporidium* levels by 90 to 99.7 percent (1.0 to 2.5-log), depending on the bin. Systems will select from different treatment and management options in a “microbial toolbox” to meet their additional treatment requirements.

### **Short Term Revisions to the Lead and Copper Rule**

The Lead and Copper Rule Short-Term Revisions (LCRSTR) were published in the *Federal Register* on October 10, 2007 (72 FR 57782). The purpose of the Short-Term Revisions is to strengthen the implementation of the LCR in the following areas: monitoring, treatment processes, public education, customer awareness, and lead service line replacement. These revisions provide more effective protection of public health by reducing exposure to lead in drinking water.

The Short-Term Revisions do not change the action levels of 0.015 milligrams per liter (mg/L) for lead and 1.3 mg/L for copper or the Maximum Contaminant Level Goals (MCLGs) established by the 1991 LCR, which are 0 mg/L for lead and 1.3 mg/L for copper. They also do not affect the rule’s basic requirements to optimize corrosion control and, if appropriate, treat source water, deliver public education, and replace lead service lines. The Short-Term Revisions continue to exclude transient non-community water systems from the requirements of the rule.

The LCRSTRs aim to enhance the implementation of the LCR in the areas of monitoring, treatment, customer awareness and lead service line replacement. The revisions are intended to improve compliance with LCR public education requirements in an effort to ensure that water customers receive meaningful, timely, and useful information needed to help limit their exposure to lead in drinking water.

The entities affected by this final rule are public water systems that are classified as community water systems (e.g., systems that provide water to year-round residents in places like homes or apartment buildings) or non-transient, non-community water systems (e.g., systems that provide water to people in locations such as schools, office buildings, restaurants, etc.)

### **Revised Total Coliform Rule**

Intended to increase public health protection, the Revised Total Coliform Rule (RTCR) is the revision to the original 1989 Total Coliform Rule. The EPA first published the RTCR in the Federal

Register on February 13, 2013 (78 FR 10269) and minor corrections on February 26, 2014 (79 FR 10665). Some key changes within the rule that aid in public health protection include setting a Maximum Contaminant Level Goal (MCLG) and Maximum Contaminant Level (MCL) for *E.coli* in an effort to protect against fecal contamination. The rule establishes a treatment technique requirement, sets requirements for sampling according to a sample siting plan, requires state-approved start-up procedures for seasonal systems, establishes assessment and corrective action requirements for vulnerable systems and specific Consumer Confidence Report language for systems with triggered assessments or *E. coli* MCL violations.

Changes within the rule are intended to reduce potential pathways whereby fecal contamination and/or pathogens, including bacteria, viruses and parasitic protozoa, could enter the system. Reduction of pathways will help prevent illnesses associated with the above contaminants such as acute gastrointestinal illness (AGI) with diarrhea, nausea, vomiting and other more severe illness such as hemolytic uremic syndrome (HUS)(kidney failure), hepatitis, and bloody diarrhea (WHO 2004). Chronic disease such as irritable bowel syndrome, renal impairment, hypertension, cardiovascular disease and reactive arthritis can result from infection by a waterborne agent (Clark et al. 2008; Clark et al. 2010; Moorin et al. 2010).

### **Electronic Reporting Regulation**

The proposed Electronic Reporting Regulation would be a state regulation crafted to save the state and public water supply systems resources, while improving efforts to protect public health. The regulation will reduce the State's drinking water data management costs by saving valuable staff time from laborious migrations and manual data entry. Data integrity will be improved as well by reducing data entry errors, effectively leading to a more accurate depiction of public water supply system compliance. Public Water Supply systems will benefit as well as the systems will have an overall reduction in office supply costs and will no longer have to pay postage fees to mail PWSS related materials to the state.

The electronic reporting regulation will allow for quicker submittals of required public water supply system related materials including: surveys, assessments, reports, monitoring, and compliance data. The quicker submittals may in turn lead to better health protection in time-sensitive related situations where prompt informed decisions are necessary, such as triggered Level 2 assessments under the Revised Total Coliform Rule or PWSS related emergencies.

The new proposed regulation recommended as K.A.R. 28-15a-32 is crafted state language.

### **Proposed Amended Regulations**

In addition to the above amendments to the LCR, the KDHE is proposing to amend existing Kansas Administrative Regulations to clarify intent, to reduce the overall number of regulations and to incorporate amendments to regulations in which the requirements have been amended by the EPA since KDHE originally adopted these regulations by reference on October 1, 2004.

K.A.R. 28-15-18 is proposed to amend subsection (i) to reduce the number of days from 45 to 30 days for a PWS to respond to significant deficiencies identified during a sanitary survey inspection. This amendment is proposed in order to comply with the requirements of the Ground Water Rule previously summarized in this regulatory impact statement.

K.A.R. 28-15-19 is proposed for amendment to clarify the original intent of the requirement for all public water supply systems to disinfect the water and maintain specified chlorine residuals throughout the entire distribution system in order to afford the same public health benefits to all customers.

K.A.R. 28-15a-2 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.2 concerning definitions and replaced terms. K.A.R. 28-15a-2(a)(4)(G) is proposed for amendment to clarify the definition of “secretary” by removing “state” from the definition. K.A.R. 28-15a-2(b) is proposed for amendment to clarify the meaning of “these regulations” and to replace “must” with “shall” wherever it appears in articles 15 and 15a of the department’s regulations.

K.A.R. 28-15a-3 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.3 concerning coverage and conditions for exclusion.

K.A.R. 28-15a-6 is proposed for amendment to remove language regarding the 40 CFR and clarifies that expired effective dates, completion dates and beginning compliance dates in regulations adopted by reference will be replaced with the effective date of this regulation.

K.A.R. 28-15a-11 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.11 concerning maximum contaminant levels for inorganic chemicals.

K.A.R. 28-15a-21 is proposed for amendment because the monitoring and analytical requirements for bacteriological sampling listed in this regulation will no longer be adopted from the federal rule but instead a state requirement. In addition, “person that operates” has been added in order to identify an actor.

K.A.R. 28-15a-23 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.23 concerning organic chemical sampling and analytical requirements.

K.A.R. 28-15a-24 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.24 concerning requirements for sampling and analyzing organic chemicals.

K.A.R. 28-15a-25 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.25 concerning analytical methods for measuring radioactivity.

K.A.R. 28-15a-26 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.26 concerning frequency of monitoring for radioactivity.

K.A.R. 28-15a-27 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.27 concerning alternate analytical techniques and testing methods. The language “testing methods” has been added for clarification purposes. The language “July 1, 2015 and appendix A to subpart C of part 141, as amended on November 10, 2009” has been added to include the 2009 amendment. Subsection (b) adds language requiring that water samples are analyzed in accordance with approved methods listed in Appendix A. Subsection (c) adds language stipulating that laboratories used for analysis be accredited as specified in K.A.R 28-15-35.

K.A.R. 28-15a-28 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.28 concerning approved laboratories.

K.A.R. 28-15a-29 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.29 concerning monitoring of consecutive public water supply systems.

K.A.R. 28-15a-31 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.31 concerning general reporting requirements.

K.A.R. 28-15a-33 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.33 concerning general record maintenance.

K.A.R. 28-15a-41 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.41 concerning special monitoring for sodium, except the last sentence of 40 C.F.R. 141.41(b) shall not be adopted.

K.A.R. 28-15a-42 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.42 concerning special monitoring for corrosivity characteristics and to require community systems to identify specific construction materials of concern.

K.A.R. 28-15a-43 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.43 concerning prohibition on use of lead pipes, solder, and flux. The 2011 Reduction of Lead in Drinking Water Act changes the permitted standards of pipes, pipe fittings, plumbing fittings and fixtures to no more than 0.25% lead calculated across the wetted surface.

K.A.R. 28-15a-60 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.60 concerning effective dates for maximum contaminant levels and maximum residual disinfectant levels.

K.A.R. 28-15a-61 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.61 concerning maximum contaminant levels for organic contaminants.

K.A.R. 28-15a-62 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.62 concerning maximum contaminant levels for inorganic contaminants.

K.A.R. 28-15a-63 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.63(c), (e), and (f) concerning maximum contaminant levels for microbiological contaminants.

K.A.R. 28-15a-64 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.64 concerning maximum contaminant levels for disinfection by-products.

K.A.R. 28-15a-65 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.65 concerning maximum residual disinfectant levels.

K.A.R. 28-15a-66 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.66 concerning maximum contaminant levels for radionuclides.

K.A.R. 28-15a-70 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.70 concerning requirements for filtration and disinfection and to delete 40 C.F.R. 141.72(a) and replace the text of 141.72(b)(3)(i) with state language in regard to disinfection requirements. 40 C.F.R. 141.74(a) and 151.75(a) will be deleted as well.

K.A.R. 28-15a-80 is proposed for amendment to adopt by reference the Short Term Revisions to the Lead and Copper Rule, the July 1, 2015 publication of 40 C.F.R. 141.80, which enhance implementation in the areas of monitoring, treatment, customer awareness, public education and lead service line replacement.

K.A.R. 28-15a-100 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.100 concerning requirements for public water supply systems using point-of-entry devices or point-of-use devices and to define the maximum number of service connections a system is permitted to have that wishes to install point-of-entry or point-of-use devices.

K.A.R. 28-15a-101 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.101 concerning use of bottled water.

K.A.R. 28-15a-110 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.110 concerning general requirements for treatment techniques.

K.A.R. 28-15a-111 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.111 concerning treatment techniques for acrylamide and epichlorohydrin.

K.A.R. 28-15a-130 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.130 concerning disinfectant residuals, disinfection by-products, and disinfection by-product precursors.

K.A.R. 28-15a-151 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.151 concerning requirements for consumer confidence reports, to require additional tested contaminants to be added to consumer confidence reports, and to clarify and add report distribution requirements.

K.A.R. 28-15a-170 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.170 concerning enhanced filtration and disinfection requirements for subpart H systems serving 10,000 or more people and to remove state alterations.

K.A.R. 28-15a-201 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.11 concerning requirements for public notification and to remove state alterations.

K.A.R. 28-15a-500 is proposed for amendment to update the adoption by reference to the July 1, 2015 publication of 40 C.F.R. 141.500 concerning requirements for filtration and disinfection, to establish

treatment technique requirements, and to clarify TTHM and HAA5 alternative data set approval.

Amendments to K.A.R. 28-15a-2 through 500 are proposed to adopt by reference the July 1, 2015 version of 40 CFR Part 141 in an effort to promote constancy between the SDWA and the regulations implemented and enforced by Kansas.

In addition, amendments to K.A.R. 28-15a-70, 28-15a-80, 28-15a-130, 28-15a-151, 28-15a-170, 28-15a-201, and 28-15a-500 are proposed in order to reduce the overall number of regulations adopted by reference under Article 15a.

Since the original adoption by reference of National Primary Drinking Water Regulations (NPDWR) on October 1, 2004, it has been determined that many of EPA's rules (subparts) under the SDWA can be adopted under one K.A.R. to effectively reduce the number of regulations necessary to implement and enforce the SDWA at the state level. The next section on proposed regulations to be revoked provides further explanation of these proposed amendments.

### **Proposed Revoked Regulations**

A number of regulations adopted by reference on October 1, 2004 are proposed to be revoked in order to reduce the number of individual regulations adopted under Article 15a. For example, the EPA's Public Notification Rule is comprised of 10 individual regulations (40 CFR Part 141. 201 through 210) which were adopted by reference on October 1, 2004 as K.A.R. 28-15a-201 through 210. KDHE is proposing to revoke nine of the 10 regulations (K.A.R. 28-15a-202 through 210) so that the entire rule (subpart) may be limited to one regulation that will be amended under K.A.R. 28-15a-201 that will adopt the entire Public Notification Rule (subpart) under 40 CFR 141.201 through 210 into K.A.R. 28-15a-201.

There are seven EPA rules (subparts) comprising 64 individual regulations for which KDHE proposes to incorporate the aforementioned revocations as follows: K.A.R. 28-15a-72 through 28-15a-76; K.A.R. 28-15a-81 through 28-15a-91; K.A.R. 28-15a-131 through 28-15a-135; K.A.R. 28-15a-152 through 28-15a-155; K.A.R. 28-15a-172 through 28-15a-175; K.A.R. 28-15a-202 through 28-15a-210; K.A.R. 28-15a-501 through 28-15a-503; K.A.R. 28-15a-530 through 28-15a-536; K.A.R. 28-15a-540 through 28-15a-544; K.A.R. 28-15a-550 through 28-15a-553; K.A.R. 28-15a-560 through 28-15a-564; and K.A.R. 28-15a-570 through 28-15a-571.

In addition, K.A.R. 28-15a-4 is proposed for revocation. KDHE is not proposing to grant variances or exemptions from provisions of these regulations.

Revoking these regulations in conjunction with the proposed amended regulations will eliminate 64 individual regulations which will be incorporated into seven existing regulations through amendments to K.A.R. 28-15a-70, 28-15a-80, 28-15a-130, 28-15a-151, 28-15a-170, 28-15a-201 and 28-15a-500.

### **Environmental Benefit Statement**

#### **1. Need for proposed amendments and environmental benefit likely to accrue.**

## A. Need

All of the proposed changes are needed to retain approval of KDHE's PWSS program and DWSRF loan program by the EPA. The SDWA requires state programs to meet federal primacy requirements for administering and enforcing the SDWA, or forfeit their PWSS program grants (approximately \$923,089 to Kansas in FY2016) and DWSRF loan program capitalization grants (approximately \$9,473,000 to Kansas in FY2016).

K.S.A. 65-171m. Public water supply systems; primary drinking water standards; rules and regulations, authority to adopt, scope; stringency of standards; requiring fluorides prohibited. This statute states in part: "(c) The standards established under this section shall be at least as stringent as the national primary drinking water regulations adopted under public law 93-523."

## b. Environmental benefit

In 1990, EPA's Science Advisory Board, an independent panel of experts appointed by Congress, cited drinking water contamination as one of the most important environmental risks and indicated that disease-causing microbial contaminants are probably the greatest remaining health risk management challenge for drinking water suppliers. Adoption of the proposed regulations is expected to provide improved drinking water quality and an increased level of health protection to the general public through the improved safety of drinking water supplies.

The proposed regulations are intended to conform the Kansas drinking water regulations to the National Primary Drinking Water Regulations (NPDWR) adopted by the EPA under the SDWA. The NPDWR establish quality standards for finished drinking water and monitoring/reporting requirements necessary to demonstrate compliance with the quality standards. A state whose drinking water regulations are as stringent as the federal drinking water regulations, can receive "primacy" for the national drinking water program. This comprehensive set of regulations proposed by KDHE, once adopted, will bring the Kansas drinking water program up-to-date with the NPDWRs adopted by EPA.

No other direct benefits to the extended environment are anticipated.

## 2. When applicable, a summary of the research or data indicating the level of risk to the public health or the environment being removed or controlled by the proposed regulations or amendments.

The U.S. Center for Disease Control (CDC) indicates that over 400 waterborne disease outbreaks were reported between 1980 and 1996 with over 750,000 associated cases of disease. The principal disease-causing agents include protozoa, viruses, and bacteria, as well as several chemicals. Most of these cases were associated with surface water. It is generally considered that, for a variety of reasons, the occurrence of these cases is substantially understated and generally under-reported.

EPA is promulgating the LT2ESWTR to reduce the public health risk associated with *Cryptosporidium* in drinking water. *Cryptosporidium* is a protozoan parasite that lives and reproduces entirely in one host. Ingestion of *Cryptosporidium* can cause cryptosporidiosis, a gastrointestinal (GI)

illness. *Cryptosporidium* is excreted in feces. Transmission of cryptosporidiosis occurs through consumption of water or food contaminated with feces or by direct or indirect contact with infected persons or animals (Casemore 1990).

*Cryptosporidium* is a widespread contaminant in surface water used as drinking water supplies. For example, among 67 drinking water sources surveyed by LeChevallier and Norton (1995), 87 percent had positive samples for *Cryptosporidium*. A more recent survey of 80 medium and large PWSs conducted by EPA detected *Cryptosporidium* in 85 percent of water sources (USEPA 2003a). *Cryptosporidium* contamination can come from animal agriculture, wastewater treatment plant discharges, slaughterhouses, birds, wild animals, and other sources of fecal matter.

In considering the maximum contaminant level goal (MCLG) of “zero” for *Cryptosporidium*, EPA relied upon animal studies, human epidemiology studies of waterborne outbreaks of cryptosporidiosis, and most notably a human feeding study which indicates that human ingestion of even a single *Cryptosporidium* oocyst can result in a 0.5% probability of infection. EPA considered eight new studies on the removal of *Cryptosporidium* by filtration in addition to existing data and information from the Microbial-Disinfection Byproduct Advisory Committee which determined that a 2-log removal of *Cryptosporidium* could be justified.

New information on health effects, occurrence, and treatment has become available since the Stage 1 DBPR that supports the need for the Stage 2 DBPR. EPA has completed a more extensive analysis of health effects, particularly reproductive and developmental endpoints, associated with DBPs since the Stage 1 DBPR. Some recent studies on both human epidemiology and animal toxicology have shown possible associations between chlorinated drinking water and reproductive and developmental endpoints such as spontaneous abortion, stillbirth, neural tube and other birth defects, intrauterine growth retardation, and low birth weight. While results of these studies have been mixed, EPA believes they support a potential hazard concern. New epidemiology and toxicology studies evaluating bladder, colon, and rectal cancers have increased the weight of evidence linking these health effects to DBP exposure. The large number of people (more than 260 million Americans) exposed to DBPs and the potential cancer, reproductive, and developmental risks have played a significant role in EPA's decision to move forward with regulatory changes that target lowering DBP exposures beyond the requirements of the Stage 1 DBPR.

In addition, EPA has evaluated data on outbreaks and the occurrence of waterborne viral and bacterial pathogens and indicators of fecal contamination in groundwater supplying PWS wells. These data indicate that there is a subset of GWSs that are susceptible to fecal contamination. Therefore, EPA believes that risk management strategies are needed to protect public health. Specifically, the CDC reports that between 1991 (the year in which the TCR became effective) and 2000, GWSs were associated with 68 waterborne disease outbreaks that caused 10,926 illnesses (Moore et al. (1993); Kramer et al. (1996); Levy et al. (1998); Barwick et al. (2000); and Lee et al. (2002)). These outbreaks accounted for 51 percent of all waterborne disease outbreaks in the United States during that time period. The major deficiencies identified by the CDC report as the likely cause of the outbreaks were source water contamination and inadequate treatment or treatment failures. Studies of viral and bacterial pathogens and/or fecal indicator occurrence in groundwaters that supply PWSs show that dozens of the public groundwater wells sampled had fecal indicator or viral presence in their wells. Based on these outbreak and occurrence data, along with concern about lack of monitoring and follow-up actions for GWSs, EPA has concluded that GWSs need to

implement targeted, risk management strategies to protect public health from bacterial and viral pathogens in fecally contaminated groundwater sources.

Lead is a naturally occurring metal but anthropogenic activities result in the highest concentrations of lead in the environment (ATSDR, 1999). Lead exposure can cause serious health effects including but not limited to: brain and kidney damage, infertility in men and women, increased blood pressure in adults, central nervous systems problems and nerve disorders, stroke, kidney disease and even death. Children are at the greatest risk as they are typically exposed to lead more often and are more sensitive as they typically absorb more of the ingested lead than adults (ATSDR, 1999). Health effects in children may include delayed mental and physical development and decreased IQ (Grumbles, 2004). During 1999-2000 approximately 2 percent of children between the ages of 1 and 5 have blood levels that exceeded the CDC's level of concern, 10 mg/dL (CDC, 2003). Pregnant women are also a primary concern as research shows that a woman exposed to lead can pass the lead to the developing fetus (Grumbles, 2004). Since the nervous system of the fetus is developing, fetuses are especially vulnerable to lead exposure.

The Lead and Copper Rule Short-Term Revisions aim to clarify monitoring requirements, improve consumer awareness, and modify the lead service line “replaced through testing” provision. The short-term revisions do not affect present action levels, corrosion control requirements, other lead service line replacement requirements, or other provisions in the existing rule that directly determine the degree to which the rule reduces risks from lead and copper.

The rule changes promote public health protection by increased awareness through public notification and education and improve lead service line management.

Intended to increase public health protection, the Revised Total Coliform Rule (RTCR) is the revision to the original 1989 Total Coliform Rule. The EPA first published the RTCR in the *Federal Register* on February 13, 2013 (78 FR 10269) and minor corrections on February 26, 2014 (79 FR 10665). Some key changes within the rule that aid in public health protection include setting a Maximum Contaminant Level Goal (MCLG) and Maximum Contaminant Level (MCL) for *E.coli* in an effort to protect against fecal contamination. The rule establishes a treatment technique requirement, sets requirements for sampling according to a sample siting plan, requires state-approved start-up procedures for seasonal systems, establishes assessment and corrective action requirements for vulnerable systems and specific Consumer Confidence Report language for systems with triggered assessments or *E. coli* MCL violations.

Changes within the rule aim to reduce potential pathways whereby fecal contamination and/or pathogens, including bacteria, viruses and parasitic protozoa, could enter the system. Reduction of pathways will help prevent illnesses associated with the above contaminants such as acute gastrointestinal illness (AGI) with diarrhea, nausea, vomiting and other more severe illness such as hemolytic uremic syndrome (HUS)(kidney failure), hepatitis, and bloody diarrhea (WHO 2004). Chronic disease such as irritable bowel syndrome, renal impairment, hypertension, cardiovascular disease and reactive arthritis can result from infection by a waterborne agent (Clark et al. 2008; Clark et al. 2010; Moorin et al. 2010).

**3. If specific contaminants are to be controlled by the proposed regulation or amendment, a description indicating the level at which the contaminants are considered harmful according to current available research.**

Most Kansans (> 2 million persons) drink tap water that meets all existing health standards all the time. These new rules will further strengthen existing drinking water standards and thus increase protection for many water systems.

EPA's Science Advisory Board concluded in 1990 that exposure to microbial contaminants such as bacteria, viruses, and protozoa (e.g., *Giardia lamblia* and *Cryptosporidium*) was likely the greatest remaining health risk management challenge for drinking water suppliers. Acute health effects from exposure to microbial pathogens are documented and associated illness can range from mild to moderate cases lasting only a few days to more severe infections that can last several weeks and may result in death for those with weakened immune systems. Both the Ground Water Rule and Long Term 2 Enhanced Surface Water Treatment Rules are being imposed to protect consumers from microbial contaminants.

Contaminants are controlled within the RTCR but this is not accomplished through a Maximum Contaminant Level or even an Action Level but rather a presence or absence. Some waterborne disease outbreaks have been found to have very low coliform levels. The RTCR looks to insure the integrity of drinking water distribution systems by monitoring for the presence of microbial contamination.

In addition, while disinfectants are effective in controlling many microorganisms, they react with natural organic and inorganic matter in source water and distribution systems to form potentially harmful DBPs. Many of these DBPs have been shown to cause cancer and reproductive and developmental effects in laboratory animals. More than 2 million Kansans consume water that has been disinfected. Because of the large population exposed, health risks associated with DBPs, need to be taken seriously. Protecting consumers from DBPs are the focus of implementing the Stage 2 Disinfection Byproducts Rule. However, the maximum contaminant levels of 0.080 mg/L for total trihalomethanes and 0.060 mg/L for haloacetic acids are not being modified.

The LCRSTR focuses on clarifying monitoring requirements, improving consumer awareness through public notification, and modifying the lead service line “replaced through testing” provision. The Action Level’s within the LCRSTR are not changing from the original LCR. No more than 10 percent of tap water samples collected during any monitoring period may exceed 1.3 mg/L for copper and 0.015 mg/L for lead.

### **Economic Impact Statement**

#### **1. Are the proposed regulations or amendments mandated by federal law as a requirement for participating in or implementing a federally subsidized or assisted program?**

Yes. Federal law requires that all PWSs comply with these drinking water standards regardless of state or tribal law. The concurrent amendments proposed to these Kansas Administrative Regulations are necessary to maintain compliance with the provisions of SWDA regarding state primacy for administrative and enforcement authority and related state eligibility for federal PWSS program grants and DWSRF program loan capitalization grants. All of the proposed changes are needed to retain approval of KDHE’s PWSS program and DWSRF loan program by the EPA. The SDWA requires state programs to meet federal primacy requirements for administering and enforcing the SDWA or they must forfeit their PWSS

program grants (approximately \$923,089 to Kansas in FY2016) and DWSRF loan program capitalization grants (approximately \$9,473,000 to Kansas in FY2016).

## **2. Do the proposed regulations or amendments exceed the requirements of applicable federal law?**

The proposed new, amended and revoked regulations are no more stringent than federal law requires for these purposes except for the Revised Total Coliform Rule (RTCR). The RTCR allows non-community groundwater systems serving less than 1,000 people the opportunity to enter into reduced monitoring where a system can monitor on a quarterly or even annual schedule. Community groundwater systems have the opportunity to sample quarterly as opposed to monthly. Presently, all public water supply systems within the state are required to conduct microbial monitoring on a monthly basis. In order to maintain the current level of public health protection, the proposed regulations do not incorporate the reduced monitoring portions of the RTCR and require no less than monthly microbial monitoring.

Presently, there is not a federal law that mandates public water supply systems submit required public water supply system related information including: surveys, assessments, reports, monitoring, and compliance data electronically. The EPA did issue an Electronic Reporting Rule for wastewater discharges on October 22, 2015.

## **3. Description of costs to agencies, to the general public, and to persons who are effected by, or subject to, the regulations.**

The core components of KDHE's PWSS program have already been developed and maintained for many years. However, KDHE must continually conform its regulations to EPA's regulations to maintain primacy under the SDWA. The proposed new and amended regulations will not increase or decrease costs for agencies or the general public. However, the proposed new rules have already cost regulated public water supply systems as detailed in the following paragraphs. Full implementation of the new rules will require one additional full-time employee at an estimated cost of \$67,000 per year to the agency.

### **a. Capital and annual costs of compliance with the proposed regulations or amendments and the persons who will bear those costs.**

As with KDHE, the core components of compliance with the SDWA for the majority of public water systems have already been developed and maintained for many years. The primary costs associated with these proposed regulations will be borne by the PWSs (both publicly and privately owned) who are required to conduct the necessary sampling, analysis, and monitoring and in those cases where standards are exceeded, to provide improved treatment for the control of contaminants in order to achieve standards. These activities will, however, require additional time, labor, and/or financial resources by these entities to generate, maintain, retain, disclose, and/or provide information to the regulating party as well as developing and maintaining technological infrastructure.

KDHE does not anticipate any capital costs for the proposed amended and revoked regulations in this package. However, the proposed new regulations do have capital costs as outlined by rule and regulation as follows:

#### **Ground Water Rule**

Effective December 1, 2009, regulated water systems had two options to comply with the Ground Water Rule (GWR). The first option is to request and be approved to comply through 4-log treatment, which is a measurement and calculation of how well the water has been disinfected before the first customer. This option does not have any significant capital cost other than mailing a monthly compliance report to KDHE for review and determination of compliance through 4-log treatment. There are currently 62 water systems complying through this option.

The second option to comply with the GWR is through triggered source water monitoring, which is extra monitoring that is required when a system that does not already treat drinking water to remove 99.99 percent (4-log) of viruses, identifies a positive sample during its Revised Total Coliform Rule monitoring (routine monthly monitoring for bacteria in the distribution system). If a system detects bacteria in its distribution system and does not provide 4-log treatment, it must collect a sample from each groundwater well (source) for *E. coli* analysis to determine if the source of water has bacteriological contamination.

During calendar year 2015, a total of 400 distribution system samples were found to test positive for total coliform bacteria, impacting 107 groundwater systems. These systems had a range of 1 – 16 groundwater wells that would have been sampled under the requirements of the rule. An *E. coli* sample costs \$12 for analysis at the KDHE Laboratory. It is estimated that it costs up to \$5 to mail or otherwise return these samples to the laboratory for a total average of \$17 per sample. Therefore, systems impacted by the triggered source water monitoring requirements would expect costs of \$17 per groundwater well (\$17 - \$272 for the systems impacted in 2015). Groundwater systems in Kansas average two wells per water system. Using similar numbers found during calendar year 2015, KDHE anticipates a state-wide cost of \$3,638 per year for all water systems to comply with this rule (\$34 per impacted system). Table 1 summarizes the anticipated annual capital costs for water systems to comply with this rule.

**Table 1**  
**Estimated Annual Costs for Complying with the**  
**Requirements of the Ground Water Rule**

AVG. # SYSTEMS IMPACTED	AVG. # WELLS PER SYSTEM	COST PER SAMPLE	AVG. COST PER SYSTEM	COST RANGE PER SYSTEM	TOTAL ANNUAL COST
107	2	\$17	\$34	\$17 - \$272	\$3,638

An additional component of the GWR is the requirement for the State to perform sanitary survey inspections of all groundwater systems every 3 years for community water systems and every 5 years for non-community systems. KDHE already conducts these inspections at these frequencies and therefore does not expect an additional cost to complete these inspections. However, water systems that are found to have significant deficiencies, which are defined as “any defect in a public water supply system’s design, operation, maintenance, or administration, as well as any failure or malfunction of any system component that causes, or has the potential to cause, an unacceptable risk to health or that could affect the reliable delivery of safe drinking water,” must take corrective action to address these deficiencies. Further, any water system which is determined to have a source of water contaminated with fecal bacteria (*E. coli*) must also take corrective action.

Addressing significant deficiencies may result in capital costs to comply with the GWR. However, these costs are difficult to estimate as corrective action can range from activities such as completing reports (no cost) to constructing a new well (~\$200,000). Since the rule became effective on December 1, 2009, KDHE has not required any well contaminated with fecal bacteria to be replaced. KDHE believes that construction of new wells or treatment facilities for the purposes of compliance with the GWR to be a rare occurrence. Therefore, efforts to correct deficiencies are estimated to cost a system less than \$500 per occurrence.

## Stage 2 Disinfection Byproducts Rule

The Stage 2 DBP rule is intended to reduce potential health risks from disinfection by-products (DBPs) in drinking water, which form when disinfectants are used to control microbial pathogens. This rule strengthens public health protection for customers of systems that deliver disinfected water by requiring such systems to meet maximum contaminant levels as an average at each compliance monitoring location (instead of as a system-wide average as in previous rules) for two groups of DBPs, trihalomethanes (THMs) and five haloacetic acids (HAA5s).

Under the Stage 2 DBP rule, systems were required to conduct an evaluation of their distribution systems, known as an Initial Distribution System Evaluation (IDSE), to identify the locations with high or potentially high disinfection by-product concentrations. These locations were then used by the systems as the sampling sites for Stage 2 DBP rule compliance monitoring. Compliance with the maximum contaminant levels for two groups of disinfection by-products (TTHMs and HAA5s) will be calculated for each monitoring location in the distribution system. This approach, referred to as the locational running annual average (LRAA), differs from Stage 1 DBPR requirements, which determine compliance by calculating the running annual average of samples from all monitoring locations across the system.

Compliance deadlines for the Stage 2 DBPR were based on the population served by the public PWS. Wholesale and consecutive systems of any size were required to comply with the requirements of the Stage 2 DBPR on the same schedule as required for the largest system in the combined distribution system (defined as the interconnected distribution system consisting of wholesale systems and consecutive systems that receive finished water). Compliance activities are outlined in Table 2.

**Table 2**  
**Stage 2 DBPR Compliance Activities and Deadlines**

SCHEDULE OF SYSTEM	POPULATION SERVED	SUBMIT SMP <sup>1</sup>	COMPLETE IDSE MONITORING	SUBMIT IDSE <sup>2</sup> REPORT	COMPLIANCE MONITORING
Schedule 1	≥ 10,000	10/1/2006	9/30/2008	1/1/2009	4/1/2012
Schedule 2	50,000 – 99,999	4/1/2007	3/31/2009	7/1/2009	10/1/2012
Schedule 3	10,000 – 49,999	10/1/2007	9/30/2009	1/1/2010	10/1/2013
Schedule 4	< 10,000	4/1/2008	3/31/2010	7/1/2010	10/1/2014

<sup>1</sup> Standard Monitoring Plan

<sup>2</sup> Initial Distribution System Evaluation

Not all systems were required to submit a SMP, complete monitoring or submit an IDSE. Under the Stage 2 DBPR, there were two options for being excused from these requirements. The first waiver potential applied to those systems which had no monitoring violations under the Stage 1 DDBPR and had

never exceeded 40 µg/L (micrograms per liter) for TTHM and never exceeded 30 µg/L for HAA5. The second waiver potential was a very small system (VSS) waiver for those systems which had collected at least one set of samples and served a population of < 500 persons.

Of the 895 water systems in Kansas required to comply with the Stage 2 DBPR prior to the initial April, 2012 implementation date, 749 water systems qualified for and were granted waivers by the EPA. A total of 146 water systems were required to complete the standard monitoring requirements of the initial distribution system evaluation. The analysis for this initial monitoring was required to be completed by a KDHE-certified private laboratory as the KDHE Laboratory did not have the capacity to take on the additional workload. Table 3 summarizes the number of systems and costs associated with conducting the standard monitoring requirements of the rule. Costs ranged from \$1,600 for the smallest water systems in Kansas to \$19,200 for the largest water systems in Kansas required to complete the initial monitoring requirements.

**Table 3**  
**Stage 2 DBPR Standard Monitoring Summary**

<b>SCHEDULE OF SYSTEM</b>	<b>NUMBER OF SYSTEMS REQUIRED TO MONITOR</b>	<b>NUMBER OF SAMPLES</b>	<b>TOTAL COSTS<sup>1</sup></b>
Schedule 1	5	480	\$96,000
Schedule 2	2	192	\$38,400
Schedule 3	38	840	\$168,000
Schedule 4	101	808	\$161,600
<b>TOTALS:</b>	<b>146</b>	<b>2,320</b>	<b>\$464,000</b>

<sup>1</sup> Cost analysis based on \$200 analytical fee charged by Continental Analytical Services (CAS) in Salina, Kansas per dual sample set for total trihalomethanes and haloacetic acids.

There are 286 water systems in Kansas that were not required to comply with the Stage 1 DBPR. However, these systems have routine compliance monitoring requirements under the Stage 2 DBPR. The Stage 2 DBPR requires these 286 systems to collect routine compliance samples with an estimated cost for analytical fees of \$200 - \$250 per year. Water systems which were required to comply with the Stage 1 DBPR that were currently on a reduced monitoring schedule of once every three years had increased monitoring costs as the Stage 2 DBPR requires monitoring at a minimum frequency of once per year. These water systems have experienced increased analytical fees estimated at \$200 - \$250 per year.

### **Long Term 2 (LT2) Enhanced Surface Water Treatment Rule**

The LT2 Rule requires that systems initially monitor their water sources to determine treatment requirements. This monitoring involves two years of monthly sampling or two samples per month for one year for *Cryptosporidium*. To reduce monitoring costs, small filtered water systems (those serving less than 10,000 persons) first monitored for *E.coli*, a bacterium that is less expensive to analyze than *Cryptosporidium*, and monitored for *Cryptosporidium* only if their *E.coli* results exceed specified concentration levels. A second round of monitoring is required no sooner than six years after completion of the initial monitoring requirements. A summary of the monitoring deadlines are found in Table 4.

**Table 4**  
**LT2 Rule Monitoring Deadlines**

SCHEDULE OF SYSTEM	POPULATION SERVED	MUST BEGIN 1 <sup>st</sup> ROUND OF MONITORING	MUST BEGIN 2 <sup>nd</sup> ROUND OF MONITORING
Schedule 1	≥ 10,000	10/1/2006	4/1/2015
Schedule 2	50,000 – 99,999	4/1/2007	10/1/2015
Schedule 3	10,000 – 49,999	4/1/2008	10/1/2016
Schedule 4 ( <i>E.coli</i> )	< 10,000	10/1/2008	10/1/2017
Schedule 4 ( <i>Crypto</i> )	< 10,000	4/1/2010	4/1/2019

Table 5 summarizes the number of water systems, samples and associated costs associated with the first round of monitoring under the LT2 Rule. KDHE anticipates similar cost estimates for the second round of monitoring. Water systems required to collect samples from *Cryptosporidium* analysis must use an EPA-approved laboratory, none of which are located in Kansas. Therefore, water systems must ship these samples outside of the state for analysis. Because of the costs associated with shipping and fees for analyzing *Cryptosporidium*, an estimate of \$500 per sample is being used.

**Table 5**  
**LT2 Rule Estimated Monitoring Costs**

SCHEDULE OF SYSTEM	NUMBER OF SYSTEMS REQUIRED TO MONITOR	NUMBER OF SAMPLES	AVERAGE COST PER SAMPLE	TOTAL COSTS
Schedule 1	6	144	\$500	\$72,000
Schedule 2	1	24		\$12,000
Schedule 3	12	288		\$144,000
Schedule 4 ( <i>E. coli</i> )	65	1,690	\$17	\$28,730
Schedule 4 ( <i>Crypto</i> )	25(21) <sup>1</sup>	650	\$500	\$325,000
<b>TOTALS:</b>	<b>84</b>	<b>2,796</b>	<b>-</b>	<b>\$581,730</b>

<sup>1</sup> Schedule 4 systems which were triggered into *Crypto* monitoring are a subset of the 65 systems which started *E. coli* monitoring but exceeded the *E. coli* trigger values.

Upon completion of the monitoring, water systems were classified in one of four treatment categories (bins) based on their monitoring results. Most systems were classified in the lowest bin (bin 1) and will face no additional requirements. Systems classified in higher bins must provide additional water treatment to further reduce *Cryptosporidium* levels by 90 to 99.7 percent (1.0 to 2.5-log), depending on the bin. Systems classified as bin 2, 3 or 4 will select from different treatment and management options in the “microbial toolbox” to meet their additional treatment requirements. At the conclusion of the first round of testing, fourteen systems were classified as Bin 2 systems and one system was not determined.

There are many different treatment options available for surface water systems which will be required to comply with this new rule. Treatment options vary from managing turbidity to levels less than required by existing regulation to upgrading an existing treatment plant, including changes in the chemicals used to treat (disinfect) the water. For many water systems, treatment options are also influenced by other rules such as the Stage 2 DBPR. The actual costs of compliance will not be known until communities evaluate their options. The costs associated with these treatment process upgrades are expected to be extremely variable depending on the current system size and age, and on the present system process configuration.

## Lead and Copper Rule Short Term Revisions

The Lead and Copper Rule Short-Term Revisions aim to clarify monitoring requirements, improve consumer awareness, and modify the lead service line “replaced through testing” provision. The short term revisions do not affect present action levels, corrosion control requirements, other lead service line replacement requirements, or other provisions in the existing rule that directly determine the degree to which the rule reduces risks from lead and copper.

The only provision within the LCRSTRs expected to result in additional costs for water systems is the requirement mandating all utilities to provide notification of lead tap water monitoring results to owners and/or occupants of homes and buildings who may consume from the taps that are part of the utility’s sampling program. Postage and staff time are the only costs associated with this new requirement, expected to be on average less than \$30 annually per system.

## Revised Total Coliform Rule

Intended to increase public health protection, the Revised Total Coliform Rule (RTCR) is the revision to the original 1989 Total Coliform Rule. The EPA first published the RTCR in the *Federal Register* on February 13, 2013 (78 FR 10269) and minor corrections on February 26, 2014 (79 FR 10665). Some key changes within the rule that aid in public health protection include setting a Maximum Contaminant Level Goal (MCLG) and Maximum Contaminant Level (MCL) for *E.coli* in an effort to protect against fecal contamination. The rule establishes a treatment technique requirement, sets requirements for sampling according to a sample siting plan, requires state-approved start-up procedures for seasonal systems, establishes assessment and corrective action requirements for vulnerable systems and specific Consumer Confidence Report language for systems with triggered assessments or *E.coli* MCL violations.

Although the RTCR allows for reduced monitoring, KDHE is not adopting these portions of the regulations. This omission better preserves public health protection, as conditions that lead to microbial contamination can change suddenly if water quality integrity is compromised. Bacteriological monitoring requirements defined in K.A.R. 28-15a-21 are not proposed for revision and maintain current monitoring requirements.

Aimed at reducing potential pathways whereby fecal contamination and/or pathogens, including bacteria, viruses and parasitic protozoa could enter the system, the most significant and costly change within the Revised Total Coliform Rule are the assessment and corrective action requirements. Systems are required by regulation to complete all triggered Level 1 assessments. Level 1 assessments are triggered when the number of positive total coliform samples allowed within a given month for their system is exceeded. If a system is issued an *E.coli* violation or has two triggered Level 1 assessments within a rolling twelve month time frame, a Level 2 assessment is triggered. Level 2 assessments will be completed by KDHE district staff. If a sanitary defect is identified within either a Level 1 or Level 2 assessment, the system has 30 days or a state defined time frame to resolve the sanitary defect.

Since the initial implementation of the RTCR began April 1, 2016, there have been a total of forty-nine triggered Level 1 assessments. Forty-six of the Level 1 assessments were triggered as a result of

exceeding the allowed number of positive total coliform samples within a given month. Three of the Level 1 assessments were triggered as a result of having a positive total coliform sample without conducting the required number of repeat samples. Since implementation, eleven Level 2 assessments have been triggered in total, three of the Level 2 assessments were triggered as a result of an *E.coli* MCL violation and the remaining eight were required after having two triggered Level 1 assessments within a rolling twelve-month time frame.

**Table 7**  
**Triggered Assessments 2016**

ASSESSMENT TYPE	NUMBER OF ASSESSMENTS	NUMBER OF SANITARY DEFECTS	ESTIMATED COSTS
Level 1 (Multiple TC+)	46	43	21,500
Level 1 (No Repeats)	3	3	1,500
Level 2 ( <i>E.coli</i> MCL)	3	3	1,500
Level 2 (Rolling 12 month)	8	24	12,000
Totals	60	73	36,500

Addressing sanitary defects identified within the RTCR assessments may result in capital costs. However, these costs are difficult to estimate as corrective action can range from activities such as changing sampling locations (no cost) to significant infrastructure improvements. Since the rule became effective on April 1, 2016, the vast majority (51) of sanitary defects identified required no cost to correct, twenty sanitary defects required an estimated \$500 or less and the remaining two were estimated to be significant, greater than \$10,000. Efforts to correct sanitary defects are estimated to cost a system less than \$500 per occurrence.

The other significant change within the RTCR affects seasonal water systems. Public water supply systems classified as seasonal are required under the RTCR to perform state-approved start-up procedures that may include: extra sampling before serving water, resolution of outstanding significant deficiencies, flushing and disinfection. The costs related to these start-up procedures are nominal and in most instances will be nothing more than the cost of sampling. Microbial sampling is \$17 per sample and most seasonal systems will only be required to take two samples for a total cost of \$34. At the time of this document, there were thirty-four seasonal systems within the state.

**b. Initial and annual cost of implementing and enforcing the proposed regulations or amendments, including the estimated amount of paperwork, and the state agencies, other governmental agencies or other persons or entities who will bear the costs.**

The KDHE Bureau of Water – Public Water Supply Section will require one additional full-time employee at an estimated cost of \$67,000 per year to the agency to fully implement the proposed regulations. Two existing FTE's spent 18 months reviewing documents associated with early implementation of these new rules at an estimated cost of \$30,000 to the agency. Paperwork associated with implementation of these rules includes letters mailed from KDHE to impacted water systems, evaluation of monitoring plans, management of analytical results and monthly compliance reports. No other state agencies, governmental agencies, persons, or entities are anticipated to incur or bear any of the costs associated with these proposed regulations.

**c. Costs which would likely accrue if the proposed regulations or amendments were not adopted; the persons who will bear the costs and those who will be effected by the failure to adopt the regulations.**

The SDWA requires state programs to meet federal primacy requirements for administration and enforcement authority in order to qualify for PWSS program grants and DWSRF program capitalization grants. Failure to amend these regulations would result in KDHE losing approximately \$923,089 in PWSS program grants in FY2016 and DWSRF program loan capitalization grants of approximately \$9,473,000 in FY2016. This would in turn negatively impact the PWSs and their customers who would not be eligible for state financial assistance but must still comply with the federal requirements of the SDWA.

**d. A detailed statement of the data and methodology used in estimating the costs used in the statement.**

The data and methodology used in preparing this regulatory impact statement were primarily obtained directly from impacted water systems. Because these rules include early implementation activities for regulated water systems, many of the costs associated with the rules have already been incurred. Costs associated with analytical fees for monitoring requirements were obtained by contacting representative KDHE-certified and EPA-approved laboratories. Those costs associated with enhancements or modifications to water treatment processes were estimated from figures reported through the KDHE-PWWS Engineering and Permits Unit, which reviews and approves plans and cost estimates for public water supply systems in Kansas.

**e. Description of any less costly or less intrusive methods that were considered by the agency and why such methods were rejected in favor of the proposed regulation.**

There are no less intrusive or less costly methods available for consideration by KDHE to achieve the purposes of the proposed regulations.

**f. Consultation with the League of Kansas Municipalities, Kansas Association of Counties, and Kansas Association of School Boards.**

KDHE anticipates that the proposed regulations will have a direct and substantial fiscal impact on the constituencies of the League of Kansas Municipalities and the Kansas Association of School Boards. No direct impact is anticipated on the constituents of the Kansas Association of Counties. Copies of the regulations, the regulatory impact statement, and the notice of hearing will be provided electronically to each of these organizations at the time of publication of the Notice of Hearing in the *Kansas Register*.